

Claims

1. An illumination device for backlighting an image reproduction device containing light valves,
5 characterized in that luminous spots (6) formed by at least one light emitting diode (9) in each case are arranged in grid form on a thermally conductive carrier (7).
- 10 2. The illumination device as claimed in claim 1, characterized in that the area of the luminous spots (6) is in each case less than the area provided by the grid.
- 15 3. The illumination device as claimed in claim 2, characterized in that lines (14) for supplying power to the light emitting diodes (9) are arranged on an insulating carrier on that area of the carrier (7) which is not occupied by luminous spots (6).
- 20 4. The illumination device as claimed in claim 3, characterized in that the lines (14) are routed in a flexible film that is continued as a flat lead (8) outside the carrier.
- 25 5. The illumination device as claimed in one of claims 2 to 4, characterized in that the luminous spots (6) are applied on submounts (10) which have good thermal conductivity and are connected to the carrier
30 (7) in a manner exhibiting good thermal conductivity.
6. The illumination device as claimed in claim 5, characterized in that the at least one light emitting diode (9) is arranged in an electrically insulated
35 manner on the submount (10).

7. The illumination device as claimed in either of claims 5 and 6, characterized in that the submounts (10) are composed of silicon.

8. The illumination device as claimed in one of claims 5 to 7, characterized in that the carrier (7) is composed of ultrapure aluminum.

5 9. The illumination device as claimed in one of claims 5 to 7, characterized in that the carrier (7) is composed of copper.

10 10. The illumination device as claimed in one of claims 5 to 9, characterized in that the carrier (7) is connected to a heat sink.

15 11. The illumination device as claimed in one of claims 2 to 10, characterized in that interspaces between the luminous spots (6) are filled with plastic (5, 12).

20 12. The illumination device as claimed in one of the preceding claims, characterized in that a luminous spot (6) is in each case formed by a plurality of light emitting diodes (9).

25 13. The illumination device as claimed in claim 12, characterized in that the light emitting diodes (9) of a respective luminous spot (6) emit varicolored light.

30 14. The illumination device as claimed in either of claims 12 and 13, characterized in that four light emitting diodes (9) form a luminous spot (6).

35 15. The illumination device as claimed in claim 14, characterized in that two green-luminous light emitting diodes, one blue-luminous and one red-luminous light emitting diode are provided per luminous spot (6).

16. The illumination device as claimed in one of the preceding claims, characterized in that the luminous

spots (6) are surrounded by a respective reflector (15).

17. The illumination device as claimed in claim 16, characterized in that a depression that is formed by the reflector (15) and contains the luminous spot is filled with a transparent plastic (13).

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18. The illumination device as claimed in one of the preceding claims, characterized in that the light emitting diodes are connected to an electric circuit in groups in each case in series.

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19. The illumination device as claimed in claim 18, characterized in that the luminous spots whose light emitting diodes are associated with a respective group are interleaved with luminous spots of other groups.

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20. The illumination device as claimed in either of claims 18 and 19, characterized in that when a plurality of identically colored light emitting diodes are present per luminous spot, the identically colored light emitting diodes are connected to different electric circuits.

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21. The illumination device as claimed in claim 20, characterized in that control devices are provided for the currents fed to the individual electric circuits, which control devices, in the event of interruption of one of the electric circuits for identically colored light emitting diodes, control the currents in the electric circuits for the at least one other electric circuit for identically colored light emitting diodes and for differently colored light emitting diodes of the same luminous spots in the sense of compensating for the color shift brought about by the interruption.

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22. The illumination device as claimed in claim 21, characterized in that the current in the at least one other electric circuit for identically colored light

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emitting diodes is increased.

23. The illumination device as claimed in either of
claims 21 and 22, characterized in that the currents in
5 the electric circuits for differently colored light
emitting diodes are decreased.

24. The illumination device as claimed in one of claims 18 to 23, characterized in that, in the case of a grid of 4×8 luminous spots having in each case two green-luminous and two red-luminous light emitting diodes, four electric circuits are provided for the red-luminous light emitting diodes, two electric circuits in each case being assigned to the light emitting diodes of identical luminous spots which are distributed over the grid in checkered fashion.

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25. The illumination device as claimed in claim 24, characterized in that the green-luminous light emitting diodes are connected to eight electric circuits, in each case one green-luminous light emitting diode of eight luminous spots being connected to one electric circuit and a further green-luminous light emitting diode of the same luminous spots being connected to another electric circuit.

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